

IN THE CLAIMS:

The following listing of claims will replace all prior versions, and listings, of the claims in the application:

1-2. (Cancelled).

3. (Currently amended) A radio frequency identification (RFID) system, comprising:

an RFID base station adapted to communicate with at least one RFID transponder; said RFID base station comprising:

a transmitter adapted to transmit radio frequency (RF) signals to said at least one RFID transponder;

a receiver adapted to receive RF signals backscattered from said at least one RFID transponder; and

a processor electrically connected to said transmitter and said receiver, and adapted to:

determine the amount of time available on a first carrier frequency;

determine the amount of time it would take to perform a particular transaction, wherein said particular transaction comprises a worst-case transaction, such that said processor is adapted to determine the amount of time it would take to perform the longest possible transaction; and

change to a second carrier frequency before said amount of time available on said first carrier frequency expires if when said amount of time on said first carrier frequency is less than said amount of time it would take to perform said particular transaction.

4. (Currently amended) A radio frequency identification (RFID) system, comprising:

an RFID base station adapted to communicate with at least one RFID transponder; said RFID base station comprising:

a transmitter adapted to transmit radio frequency (RF) signals to said at least one RFID transponder;

a receiver adapted to receive RF signals backscattered from said at least one RFID transponder; and

a processor electrically connected to said transmitter and said receiver, and adapted to:

determine the amount of time available on a first carrier frequency;

determine the amount of time it would take to perform a particular transaction, wherein said particular transaction comprises a worst-case transaction, such that said processor is adapted to determine the amount of time it would take to perform the longest possible transaction with said at least one RFID transponder; and

change to a second carrier frequency before said amount of time available on said first carrier frequency expires if when said amount of time on said first carrier frequency is less than said amount of time it would take to perform said particular transaction.

5. (Currently amended) A radio frequency identification (RFID) system, comprising:

an RFID base station adapted to communicate with at least one RFID transponder in accordance with a predetermined hopping sequence defined by a frequency hopping algorithm; said RFID base station comprising:

a transmitter adapted to transmit radio frequency (RF) signals to said at least one RFID transponder;

a receiver adapted to receive RF signals backscattered from said at least one RFID transponder; and

a processor electrically connected to said transmitter and said receiver, and adapted to:

determine the amount of time available on a first carrier frequency of the hopping sequence;

determine the amount of time it would take to perform a particular transaction, wherein said particular transaction is a transmission of a particular RF signal, such that said processor is adapted to determine the amount of time it would take to transmit said particular RF signal; and

change to a second carrier frequency of the hopping sequence before said amount of time available on said first carrier frequency expires if when said amount of time on said first carrier frequency is less than said amount of time it would take to perform said particular transaction.

6. (Currently amended) A radio frequency identification (RFID) system, comprising:

an RFID base station adapted to communicate with at least one RFID transponder; said RFID base station comprising:

a transmitter adapted to transmit radio frequency (RF) signals to said at least one RFID transponder;

a receiver adapted to receive RF signals backscattered from said at least one RFID transponder; and

a processor electrically connected to said transmitter and said receiver, and adapted to:

determine the amount of time available on a first carrier frequency;

determine the amount of time it would take to perform a particular transaction, wherein said particular transaction is both a transmission of a particular RF signal and an expected reception of a particular RF signal in response thereto, such that said processor is adapted to determine the amount of time it would take to transmit said particular RF signal and the expected amount of time it would take to receive said particular RF signal in response thereto; and

change to a second carrier frequency before said amount of time available on said first carrier frequency expires if when said amount of time on said first carrier frequency is less than said amount of time it would take to perform said particular transaction.

7. (Previously presented) The RFID system of Claim 5, further comprising said at least one RFID transponder.

8. (Previously presented) The RFID system of Claim 5, wherein said RFID base station further comprises a memory device electrically connected to said processor, wherein said memory device is adapted to store at least partial program information as to when said processor should hop to a different carrier frequency.

9. (Previously presented) The RFID system of Claim 5, further comprising a digital-to-analog (D/A) converter, said D/A converter electrically connecting said processor to said transmitter.

10. (Original) The RFID system of Claim 8, further comprising an analog-to-digital (A/D) converter, said A/D converter electrically connecting said processor to said receiver.

11. (Previously presented) The RFID system of Claim 5, further comprising a transceiver, said transceiver comprising said transmitter and said receiver.

12-13. (Cancelled).

14. (Currently amended) A method for improving transmission rates in a radio-frequency-identification (RFID) base station, comprising:

- performing a first transaction with at least one RFID transponder over a first carrier frequency;

- determining the amount of time available on said first carrier frequency;

- determining the amount of time it would take to perform a worst-case transaction, said worst-case transaction being the longest transaction that can be performed by said RFID base station;

- forcing said RFID base station to hop to a second carrier frequency before said amount of time available on said first carrier frequency expires if when said amount of time on said first carrier frequency is less than said amount of time it would take to perform said worst-case transaction.

15. (Currently amended) A method for improving transmission rates in a radio-frequency-identification (RFID) base station, comprising:

- performing a first transaction with at least one RFID transponder over a first carrier frequency;

- determining the amount of time available on said first carrier frequency;

- determining the amount of time it would take to perform a worst-case transaction, said worst-case transaction being the longest transaction that can be performed by said RFID base station and with said at least one RFID transponder;

- forcing said RFID base station to hop to a second carrier frequency before said amount of time available on said first carrier frequency expires if when said amount of time on said first carrier frequency is less than said amount of time it would take to perform said worst-case transaction.

16. (Currently amended) A method for improving transmission rates in a radio-frequency-identification (RFID) base station, comprising:

performing a first transaction with at least one RFID transponder over a first carrier frequency in a predetermined hopping sequence;

determining the amount of time available on said first carrier frequency;

determining the amount of time it would take to transmit a particular radio frequency (RF) signal;

forcing said RFID base station to hop to a second carrier frequency in the predetermined hopping sequence before said amount of time available on said first carrier frequency expires if when said amount of time on said first carrier frequency is less than said amount of time it would take to transmit said particular RF signal.

17. (Currently amended) A method for improving transmission rates in a radio-frequency-identification (RFID) base station, comprising:

performing a first transaction with at least one RFID transponder over a first carrier frequency;

determining the amount of time available on said first carrier frequency;

determining the amount of time it would take to transmit a particular radio frequency (RF) signal and an amount of time that it might take to receive a responsive RF signal from said at least one RFID transponder;

forcing said RFID base station to hop to a second carrier frequency before said amount of time available on said first carrier frequency expires if when said amount of time on said first carrier frequency is less than said amount of time it would take to transmit said particular RF signal and said amount of time it might take to receive said responsive RF signal from said at least one RFID transponder.

18. (Original) The method of Claim 16, wherein said step of performing a first transaction with at least one RFID transponder further comprises transmitting a first RF signal to said at least one RFID transponder, said first RF signal and said particular RF signal each comprising information selected from a list of information consisting of commands and data.

19. (Currently amended) ~~The method of Claim 16,~~ A method for improving transmission rates in a radio-frequency-identification (RFID) base station, comprising:

performing a first transaction with at least one RFID transponder over a first carrier frequency;

determining the amount of time available on said first carrier frequency;

determining the amount of time it would take to transmit a particular radio frequency (RF) signal;

forcing said RFID base station to hop to a second carrier frequency before said amount of time available on said first carrier frequency expires when said amount of time on said first carrier frequency is less than said amount of time it would take to transmit said particular RF signal;

wherein said step of determining the amount of time available on said first carrier frequency further comprises comparing the amount of time that the RFID base station has continuously been on said first carrier frequency to an amount of time permitted by the Federal Communications Commission (FCC).



20. (Currently amended) ~~The method of Claim 16,~~ A method for improving transmission rates in a radio-frequency-identification (RFID) base station, comprising:

performing a first transaction with at least one RFID transponder over a first carrier frequency;

determining the amount of time available on said first carrier frequency;

determining the amount of time it would take to transmit a particular radio frequency (RF) signal;

forcing said RFID base station to hop to a second carrier frequency before said amount of time available on said first carrier frequency expires when said amount of time on said first carrier frequency is less than said amount of time it would take to transmit said particular RF signal;

wherein said step of determining the amount of time it would take to transmit a particular RF signal is performed prior to said step of determining the amount of time available on said first carrier frequency.

21. (Currently amended) A frequency-hopping-spread-spectrum (FHSS) method for use in a radio-frequency-identification (RFID) device, comprising:

transmitting a first radio frequency (RF) signal over a first carrier frequency;

determining the amount of time available on said first carrier frequency;

determining the amount of time it would take to transmit a particular RF signal;

transmitting a second RF signal over said first carrier frequency if when said amount of time available on said first carrier frequency is greater than said amount of time it would take to transmit said particular RF signal; and

transmitting a second RF signal over a second carrier frequency if when said amount of time available on said first carrier frequency is less than said amount of time it would take to transmit said particular RF signal.

22. (Original) The FHSS method of Claim 21, wherein said step of determining the amount of time it would take to transmit a particular RF signal further comprises determining the amount of time it would take to transmit said second RF signal.

23. (Currently amended) ~~The FHSS method of Claim 21,~~ A frequency-hopping-spread-spectrum (FHSS) method for use in a radio-frequency-identification (RFID) device, comprising:

transmitting a first radio frequency (RF) signal over a first carrier frequency;

determining the amount of time available on said first carrier frequency;

determining the amount of time it would take to transmit a particular RF signal;

transmitting a second RF signal over said first carrier frequency when said amount of time available on said first carrier frequency is greater than said amount of time it would take to transmit said particular RF signal; and

transmitting a second RF signal over a second carrier frequency when said amount of time available on said first carrier frequency is less than said amount of time it would take to transmit said particular RF signal;

wherein said step of determining the amount of time it would take to transmit a particular RF signal further comprises determining the amount of time it would take to transmit an RF signal having the longest transmission time of any RF signal that might be transmitted by said RFID device.

24. (Currently amended) The FHSS method of Claim 21, further comprising the step of determining the amount of time it would take to receive a modulated RF signal, said steps of transmitting a second RF signal further comprise:

transmitting a second RF signal over said first carrier frequency if when said amount of time available on said first carrier frequency is greater than the product of said amount of time it would take to transmit said particular RF signal and said amount of time it would take to receive said modulated RF signal; and

transmitting a second RF signal over said second carrier frequency if when said amount of time available on said first carrier frequency is less than the product of said amount of time it would take to transmit said particular RF signal and said amount of time it would take to receive said modulated RF signal.

25. (Currently amended) ~~The FHSS method of Claim 24,~~ A frequency-hopping-spread-spectrum (FHSS) method for use in a radio-frequency-identification (RFID) device, comprising:

transmitting a first radio frequency (RF) signal over a first carrier frequency;

determining the amount of time available on said first carrier frequency;

determining the amount of time it would take to transmit a particular RF signal;

transmitting a second RF signal over said first carrier frequency when said amount of time available on said first carrier frequency is greater than said amount of time it would take to transmit said particular RF signal;

transmitting a second RF signal over a second carrier frequency when said amount of time available on said first carrier frequency is less than said amount of time it would take to transmit said particular RF signal; and

determining the amount of time it would take to receive a modulated RF signal;

wherein said steps of transmitting a second RF signal further comprise:

transmitting a second RF signal over said first carrier frequency when said amount of time available on said first carrier frequency is greater than the product of said amount of time it would take to transmit said particular RF signal and said amount of time it would take to receive said modulated RF signal; and

transmitting a second RF signal over said second carrier frequency when said amount of time available on said first carrier frequency is less than the product of said amount of time it would take to transmit said particular RF signal and said amount of time it would take to receive said modulated RF signal; and

wherein said steps of determining amounts of time it would take to

transmit a particular RF signal and receive a modulated RF signal further comprise:

determining the amount of time it would take to transmit an RF signal having the longest transmission time of any RF signal that might be transmitted by said RFID device; and

determining the amount of time it might take to receive a modulated RF signal in response to transmitting said RF signal having the longest transmission time.